# Final Project Proposal “Tree Loss and Emissions in Indonesia: Trend and Correlations from 2001-2021”

Data 720 Programming Methods for Data Science   
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### Research Objective

The project aims to investigate the trend of tree cover loss alongside trends in country-level carbon data, to see if there is relationship between tree cover loss and country-level carbon data, using the case of Indonesia from 2001 to 2021. The research hypothesizes that there is a positive correlation between tree cover loss and higher carbon emissions. It is likely that the emission trend will not only be affected by tree cover loss but also by other factors such as big industry, agriculture, transportation and other factors; therefore, this research will identify the extent to which tree cover loss is a useful correlate for carbon emissions, and vice versa. What we will learn from the data is the importance of understanding tree cover loss, its trend, and the relationship with carbon emission data. This understanding is critical for designing mitigation policies and protecting biodiversity of flora and fauna that live in Indonesian rainforests (although the side effects for biodiversity will not be discussed in this research project, because the scope will be limited to the relationship between tree cover loss and emissions). For future reference, this type of research can be used to provide insights to support reforestation and emission reduction, to inform policymakers and NGOs on the effectiveness of current deforestation or land use regulations.

### Potential Data Source

Datasets are publicly available on <https://www.globalforestwatch.org> and updated annually. “Tree cover data produced by the University of Maryland’s GLAD [Global Land Analysis & Discovery] laboratory in partnership with Google (Hansen et al. 2013). Tree cover loss is defined as ‘stand replacement disturbance’ which is considered to be clearing of at least half of tree cover within a 30-meter pixel. Carbon densities, emissions, removals, and net flux (megagrams CO2e/yr) are from Harris et al. 2021. The emissions data quantifies the amount of carbon dioxide emissions to the atmosphere where forest disturbances have occurred, and includes CO2, CH4, and N2O and multiple carbon pools.”[[1]](#footnote-1)

### Approach

Correlation analysis will be conducted to assess the relationship between tree loss and emissions, plus simple linear regression modelling to predict emissions based on the extent of tree loss. Both tree loss and emissions data will also be visualized to see the trend over the last 2 decades from 2001 to 2021.

1. Read\_Me tab Document produced by World Resources Institute, GLAD, and Global Forest Watch [↑](#footnote-ref-1)